2006 RESEARCH PROBLEM STATEMENT

Problem Title: A Safety Analysis of Fatigue and Drowsy Driving **No.: 06.06-3**

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1. Briefly describe the problem to be addressed:

On average, at least 10 percent of all fatal crashes in Utah have been identified as fatigue-related. Driver fatigue, however, is difficult for officers to assess; hence fatigue-related crashes are likely under-reported and may be contributing to significantly more crashes than statistics show.

UDOT has recognized the seriousness of fatigue and drowsy driving and has taken a number of measures to reduce fatigue related crashes. One of the primary measures was the creation and installation of fatigue warning signs at several locations on I-80 between Tooele and Wendover beginning in November 2004. The 2005 crash data shows a reduction in crash numbers related to drowsy driving, presumably as a result of these signs. In addition, a task force comprised of UHP, UDOT, Utah Highway Safety Office, and a private company was formed in 2005 to promote awareness through various media avenues.

The purpose of this research is to develop a strategy to mitigate fatigue-related crashes statewide. First, to identify locations where fatigue is a primary causal factor for crashes in roadway segments. Second, to evaluate the effectiveness of current mitigation measures including the interstate fatigue warning signs and the educational campaign related to fatigue and drowsy driving. Third, to identify other mitigation measures for fatigued driving. Fourth, to provide recommendations for mitigation at locations in step 1 using the identified measures.

Strategic Goal: ☐ Preservation ☒ Operation ☒ Capacity ☒ Safety (Check all that apply)

2. List the research objective(s) to be accomplished:

1. Utilization of the GIS enabled web delivered data almanac and the C.A.R.S. data system to identify high crash locations where fatigue and drowsy driving may be the significant causes.
2. Evaluate the effectiveness of the mitigation efforts to date by UDOT related to fatigue and drowsy driving.
3. Propose and evaluate possible engineering solutions to mitigate the concerns at the identified locations. Solution could include additional signage, rumble strips, rest stops, and so forth.
4. Make recommendations for mitigation measures at identified locations.

3. List the major tasks required to accomplish the research objective(s): 18 months Estimated person-hours 1,750

1. Perform an in depth analysis of crash data from the C.A.R.S. data system and the GIS crash data almanac to identify fatigue and drowsy driving high crash locations on all major state routes.
2. Solicit input from emergency service personnel, UHP, and other local law enforcement personnel to verify high crash locations identified and to pinpoint additional locations.
3. Evaluate the effectiveness of the fatigue warning signs on I-80 through an analysis of crash data before and after installation combined with a survey of motorists along this stretch between Tooele and Wendover.
4. Perform literature review on the mitigation techniques available to reduce fatigue and drowsy driving.
5. Evaluate the effectives of the median/education campaign efforts.
6. Perform on-site visits to evaluate conditions and identify engineering mitigation efforts at each site.
7. Provide final recommendations and conclusions on both the effectiveness of current installations and future strategies.

4. Outline the proposed schedule (when do you need this done, and how we will get there):

It is recommended that this project begin in Fall 2006 with the initial tasks of the literature review and evaluation of effectiveness. Once the effectiveness is determined, additional sites can be identified and on-site visits performed in the summer 2007. Results would then be tabulated in the Fall 2007 and recommendations made.

5. Indicate type of research and / or development project this is:

Large: ☒ Research Project ☒ Development Project
Small: ☐ Research Evaluation ☐ Experimental Feature ☐ New Product Evaluation ☐ Tech Transfer Initiative :
☐ Other _____

6. What type of entity is best suited to perform this project (University, Consultant, UDOT Staff, Other Agency, Other)?

University and UDOT Staff joint participation with input from focus groups comprised of UHP and local participants.

7. What deliverable(s) would you like to receive at the end of the project? (e.g. useable technical product, design method, technique, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tool, etc.)

The deliverables expected from this project includes a report documenting the high crash locations for fatigued driving, as well as recommendations of mitigations for those locations. Also included will be an evaluation of current mitigation measures and documentation of the literature review and survey results. The report will serve as the basis of UDOT's strategy to mitigate fatigue-related crashes statewide.

8. Describe how this project will be implemented at UDOT.

This project will be implemented at UDOT through the Traffic & Safety program. Funding for recommended mitigation measures is available through multiple sources including the Roadway Safety Improvement Programs, the Safety Spot Improvement Program, the UDOT Signing Program, and other funding sources available to local governments. The result of this research will be extremely useful for the Department to focus available resources on reducing fatigue-related crashes.

9. Describe how UDOT will benefit from the implementation of this project, and who the beneficiaries will be.

UDOT will benefit from this project by implementing engineering mitigation measures at those high crash locations identified to reduce crashes caused by fatigue and drowsy driving. The documented results will also be useful in aiding the Department in understanding how to best apply the signage and education efforts in the future. The ultimate goal for the project, however, is to communicate the results to law enforcement and the general public in an effort to SAVE LIVES!

10. Describe the expected risks, obstacles, and strategies to overcome these.

No known risks.

11. List the key UDOT Champion of this project (person who will help Research steer and lead this project, and will participate in implementation of the results):

Peter Tang, Traffic & Safety (801) 965-4285

12. Estimate the cost of this research study including implementation effort (use person-hours from No. 3): $39,500

13. List other champions (UDOT and non-UDOT) who are interested in and willing to participate in the Technical Advisory Committee for this study:

	Name	Organization/Division/Region	Phone
A)	Grant Schultz	Brigham Young University	(801) 422-6332
B)	Rob Clayton	UDOT Traffic & Safety	(801) 965-4521
C)	Robert Hull	UDOT Traffic & Safety	(801) 965-4273
D)	TBD	UHP	
E)			
F)			
G)			

14. Identify other Utah agencies, regional or national agencies, or other groups that may have an interest in supporting this study:

Utah Highway Patrol, Utah Highway Safety Office, NCHRP, TRB, ITE, City and County